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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,037	07/13/2001	Zine Eddine Boutaghou	STL 9721	2226

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EXAMINER	
VINH, LAN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/905,037	BOUTAGHOU, ZINE EDDINE	
	Examiner	Art Unit	
	Lan Vinh	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-50* is/are pending in the application.

4a) Of the above claim(s) *39-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-38 and 43-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 31-38, 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Bulat et al (US 5,192,699)

Bulat discloses a method for fabricating FET semiconductor device. The method comprises the steps of:

positioning a photoresist layer 32/mask relative to a semiconductor structure/device, the layer 32/mask being formed of a pattern exposing a surface of the semiconductor structure/device (col 4, lines 30-32; fig. 8)

etching the patterned layer 32 into a surface of the structure to form a etched layer/feature, the feature includes one rounded edge/bending/arcuate edge (col 4, lines 52-64; figs 9-10)

providing a contact member 35B connected to the feature (col 5, lines 9-15; fig. 12), which reads on providing a mating element and connecting the mating element and the feature

Regarding claim 32, Fig. 10 of Bulat shows that the etched layer/feature is formed into the substrate

Regarding claim 34, Fig. 10 also shows that etched layer/feature protrudes from the substrate

Regarding claims 37-38, Figs 8-9 show the patterned mask 32 is form with variable spacing to produce the rounded slope and varied rounded slopes, the mask is formed with spacing that are closer near the surface of the device and more widely spaced near the sidewall

The limitations of claims 33, 35, 36 have been discussed above

Regarding claim 44, Balut discloses that the semiconductor structure comprises a layer 30, the layer 30 is being etched (col 4, lines 59-65)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over in Bulat et al (US 5,192,699) view of Berry et al (US 6,344,383)

Bulat method has been described above. Bulat differs from the instant claimed invention as per claim 43 by performing RIE etching instead of ion beam etching

Berry, in a method for manufacturing semiconductor, discloses dry etching using plasma etching or ion beam etching (col 6, lines 22-25)

One skilled in the art at the time the invention was made would have found it obvious to modify Bulat method by using ion beam etching instead of RIE etching

in view of Berry teaching because Berry discloses that reactive ion etching (RIE) and ion beam etching are standard dry etching techniques in the art (col 6, lines 20-23)

5. Claims 45-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over in Bulat et al (US 5,192,699) view of Peterson et al (US 6,335,224))

Bulat discloses a method for fabricating a semiconductor device. The method comprises the steps of:

etching a patterned layer 32 into a surface of a semiconductor devcie to form a etched layer/feature, the feature includes one rounded edge/bending/arcuate edge (col 4, lines 52-64; figs 9-10)

providing a contact member 35B connected to the feature (col 5, lines 9-15; fig. 12), which reads on providing a mating element and inserting the mating element into the feature. Bulat also discloses that the rounded edges eliminate abrupt steps in the structure, thus assuring that the deposited metal contacts and connections are of adequate thickness throughout (col 5, lines 38-44), which reads on the rounded edge reduces damage to the feature

Unlike the instant claimed invention as per claim 45, Balut fails to disclose that the semiconductor device is a MEMS device

Peterson discloses a method for protecting a microelectronic (MEMS) using a rounded patterned masking layer 14 (col 7, lines 22-27, fig 1C)

Since both Balut and Peterson are concerned with a method using rounded patterned masking layer, one skilled in the art would have found it obvious to

employ Balut's rounded masking layer on a MEMS device in view of Peterson teaching because Peterson discloses that the MEMS elements are stabilized and protected by protective coating l4/rounded masking layer (col 8, lines 41-44)

Regarding claim 46, Fig. 10 of Bulat shows that the etched layer/feature is formed into the substrate

Regarding claim 48, Fig. 10 also shows that etched layer/feature protrudes from the substrate

The limitations of claims 47, 49-50 have been discussed above

Response to Arguments

5. Applicant's arguments filed 4/10/2006 have been fully considered but they are not persuasive.

The applicants argue that the office allegation that the photoresist 32 in Bulat discloses both the mask and the feature etched into the surface of the device is incorrect because the same feature (layer 32) can not function as both a mask and a feature with a rounded edge etched into a surface of the device. Thus, Bulat fails to disclose the limitation of "etching the pattern into a surface of the device to form a feature, wherein said feature includes at least one rounded edge", as required in claim 31. This argument is unpersuasive because the office action (paragraph 2 above) does not refer to the photoresist layer 32 as both the mask and the etched feature, the office action clearly refers to col 4, lines 52-64 of Bulat wherein Bulat discloses that an oxide layer 30 is etched using the patterned photoresist layer 32 as a mask to form an etched feature having

rounded edge and fig. 9-10 of Bulat which clearly shows that the etched feature 30 having rounded edge resulted from an etching step using the photoresist layer 32/pattern as a mask. It is also noted that according to the section 2125 of the MPEP, DRAWINGS CAN BE USED AS PRIOR ART

Drawings and pictures can anticipate claims if they clearly show the structure which is claimed. In re Mraz, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972).

Thus, it is asserted that Bulat anticipates the claimed feature of "etching the pattern into a surface of the device to form a feature, wherein said feature includes at least one rounded edge"

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LV
May 12, 2006